STATE FOREST LAND
ENVIRONMENTAL CHECKLIST

Purpose of Checklist:

The State Environmental Policy Act (SEPA), chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decided whether an EIS is required.

Instructions for Applicants:

This environmental checklist asks you to describe some basic information about your proposal. Governmental agencies use this checklist to determine whether the environmental impacts of your proposal are significant, requiring preparation of an EIS. Answer the questions briefly, with the most precise information known, or give the best description you can. *Questions in italics are supplemental to Ecology's standard environmental checklist. They have been added by the DNR to assist in the review of state forest land proposals. Adjacency and landscape/ watershed-administrative-unit (WAU) maps for this proposal are available on the DNR internet website at http://www.dnr.wa.gov under "SEPA Center." These maps may also be reviewed at the DNR regional office responsible for the proposal. This checklist is to be used for SEPA evaluation of state forest land activities.*

You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write "do not know" or "does not apply." Complete answers to the questions now may avoid unnecessary delays later. *All of the questions are intended to address the complete proposal as described by your response to question A-11. The proposal acres in question A-11 may cover a larger area than the forest practice application acres, or the actual timber sale acres.*

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the governmental agencies can assist you.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Use of checklist for nonproject proposals:

Complete this checklist for nonproject proposals, even though questions may be answered " does not apply." IN ADDITION, complete the SUPPLEMENTAL SHEET FOR NON PROJECT ACTIONS (part D).

For nonproject actions, the references in the checklist to the words "project," "applicant," and "property or site" should be read as "proposal," "proposer" and "affected geographic area," respectively.

A. BACKGROUND

1. Name of proposed project, if applicable:

   Timber Sale Name: **CAPTAINS CUP** *Agreement #:***30-82153**

2. Name of applicant: **Department of Natural Resources**

3. Address and phone number of applicant and contact person:

   DNR Northwest Region
   919 North Township Street
   Sedro-Woolley, WA 98284
   Contact Person: Laurie Bergvall (360) 856-3500

4. Date checklist prepared**: 04/23/2009**

5. Agency requesting checklist: **Department of Natural Resources**

6. Proposed timing or schedule (including phasing, if applicable):

   a. *Auction Date:***01/27/2010**
   b. *Planned contract end date (but may be extended):* **09/30/2011**

c. *Phasing:* **Does not apply.**

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

None anticipated at this time.

Timber Sale

a.	*Site preparation:*	**Treatment will be assessed in 2-3 years.**
b.	*Regeneration Method:*	**Hand plant with conifer seedlings.**
c.	*Vegetation Management:*	**Treatment will be assessed in 3-5 years.**
d.	*Thinning:*	**Treatment will be assessed in 10-15 years.**

Roads: **Higgins Mountain Mainline, Lake Cavanaugh Mainline (LC-ML), LC-13, LC-1319, LC-1327, LC-27, LC-34, LC-36, and LC-37.**

Rock Pits and/or Sale: **The LC-1315 rock pit will be utilized in the future for timber sales, road maintenance and other forest management activities. HM-21 existing gravel pit will be utilized to process rock to generate pit run sand and gravel and 3" to 12" coble for use with the installation of the fish passage culvert. Onsite rock may be used for road construction, if rock sources are discovered along haul routes or within the sale area.**

Other:

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

☒ *303 (d) – listed water body in WAU:* ☐ *temp* ☐ *sediment* ☒ *completed TMDL (total maximum daily load):*
☐ *Landscape plan:*
☒ *Watershed analysis:* **Draft Deer Creek Watershed Analysis**
☐ *Interdisciplinary team (ID Team) report:*
☒ *Road design plan:* **available at Northwest Region Office**
☐ *Wildlife report:*
☐ *Geotechnical report:*
☐ *Other specialist report(s):*
☐ *Memorandum of understanding (sportsmen's groups, neighborhood associations, tribes, etc.):*
☒ *Rock pit plan:* **Northwest Region Office**
☒ *Other:* **Forest Practices Activity Maps, WAU map for rain-on-snow areas, Policy for Sustainable Forests, June 2006, State Soil Survey, 1992; EIS for Policy for Sustainable Forests, June 2006; DNR GIS databases, Habitat Conservation Plan (HCP) & Environmental Impact Statement, September 1997; HCP Riparian Forest Strategy, July 2006, HCP Checklist, Slope Stability Checklist, Planning and Tracking Special Concerns Report and associated maps, Road Maintenance and Abandonment Plan (RMAP) #R280010L, Weighted Old Growth Habitat Index (WOGHI).**

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

10. List any government approvals or permits that will be needed for your proposal, if known.

☒ *HPA* ☐ *Burning permit* ☐ *Shoreline permit* ☐ *Incidental take permit* ☒ *FPA #* _____ ☐ *Other:*

11. Give brief, complete description of our proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include specific information on project description.)

a. *Complete proposal description:*
This proposal takes place in the Lake Cavanaugh and Deer Creek WAUs. The Captains Cup Timber Sale is a three-unit variable retention harvest. The sale area includes Douglas-fir, western hemlock, red alder, bigleaf maple and western redcedar. The proposal area of this three-unit sale is approximately 115 acres.

Estimate Total Volume: 5,814 MBF

Unit 1:	**Total Gross Acres:**	**67.6**
	Total Net Harvest Acres:	**30.2**
Unit 2:	**Total Gross Acres:**	**42.3**
	Total Net Harvest Acres:	**31.8**

Unit 3:	**Total Gross Acres:**	**69.0**
	Total Net Harvest Acres:	**53.1**
Rights-of-Way:		**0.1**

b. Timber stand description pre-harvest (include major timber species and origin date), type of harvest, overall unit objectives.

Stand Description:
The proposed activity will take place in mixed-species stands of Douglas-fir and western hemlock, red alder, redcedar with a small component of bigleaf maple. The proposal area location is Sections 23, 24, 25 of Township 33 North, Range 6 East, W.M. and Section36 of Township 33 North, Range 7 East, W.M. The average stand age is approximately 60-80 years old. The understory is composed primarily of swordfern, salal, salmonberry and vine maple.

Type of Harvest:
This activity will be a variable retention harvest with 8 legacy trees per acre designed to remain for more than one rotation.

Overall Unit Objectives:
Harvest objectives are to generate revenue for trust beneficiaries through sustainable forest management while meeting the obligation of Forest Practices rules and the Department's HCP. Specific objectives are to harvest the stand while protecting streams (water quality and fish habitat), retain structurally unique trees, minimize soil impacts and minimize disturbance to potentially unstable slope features. The proposed area is located primarily on Forest Transfer land trusts (01) and with some Agricultural School (04).

Wildlife Objectives:
The general wildlife objective is to minimize the immediate impact to the current wildlife populations while preserving some unique characteristics for future wildlife habitat needs. Leave tree areas were designed to contain trees resistant to wind throw, while protecting relatively unique features such as snags, large down woody debris, large structurally unique trees and riparian areas.

Many of the leave trees are large structurally unique trees that have the characteristics desired for future snag retention. Leave trees are representative of the proposed sale's timber type, which consists predominantly of conifer and red alder. The majority of these trees were 10 inches or greater in diameter. Snags will be left in areas where possible and snags within the harvest area will be retained if they meet the Washington State Department of Labor and Industry Safety Guidelines. All snags felled for safety reasons shall remain in the area where they fall and all existing down woody shall remain on site. In Unit 1 there are three live remnant legacy trees with 90% that is dead. These were observed by a region biologist and determined to hold significant value to wildlife for habitat and foraging. All three trees were protected and buffered from any forest harvesting activites.

Silvicultural Objectives:
The primary silvicultural objective for the area is to grow healthy and diverse forest stands as rapidly as possible while maintaining or improving the ecological integrity of the area. It is probable that chemical site preparation will also be needed, as there is heavy brush competition on parts of the sale area. After site preparation is completed, the area will be planted with conifer seedlings. Some natural regeneration is expected from seeds scattered by leave trees and adjacent stands. This natural regeneration should offset some of the expected seedling mortality attributed to deer browse, rodent damage and competing vegetation. Regeneration surveys will be conducted to monitor the progress of the new plantation.

Harvest Systems:
Roughly two thirds of the harvest area is designed for ground-based systems and one third will be cable harvested. Cable systems may be required in sensitive soil areas.

c. *Road activity summary. See also forest practice application (FPA) for maps and more details.*

Type of Activity	How Many	Length (feet) (Estimated)	Acres (Estimated)	Fish Barrier Removals (#)	Steepest Side Slope Road Crosses	Abandonment Date Month/Year
Construction		2,900	1.06		35	
Reconstruction		31,811		1	65	
Abandonment		3,552	1.30	0	45	Contract termination
Temporary Construction		7,481	2.75		60	
Bridge Install/Replace	0	--				
Culvert Install/Replace (fish)	1					
Culvert Install/Replace (no fish)	33					

*All culverts to be installed (this includes both typed stream crossings and relief culverts

12. Location of proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist. *(See timber sale map available at DNR region office, and/or color landscape/WAU map on the DNR website http://www.dnr.wa.gov under "SEPA Center.")*

a. Legal description:
Section 23, **Township 33 North, Range 6 East**
Section 24, Township 33 North, Range 6 East
Section 25, Township 33 North, Range 6 East
Section 36, Township 33 North, Range 7 East

b. *Distance and direction from nearest town (include road names):*
From Sedro-Woolley travel 11.0 miles south on HWY 9 to Lake Cavanaugh Road. Turn left and travel 10.2 miles to South Shore Drive. Turn right and travel 4.4 miles to LC-ML. Turn right, pass through the gate and travel 1.2 miles to junction. Turn left for Unit 3 and turn right for Units 1 and 2. To reach Unit 3 travel 2.0 miles to junction, continue right for 0.7 miles to another junction. Turns left 1.2 miles to west area of Unit 3, or continue forward to east area. To reach Units 1 and 2 continue to the end of road.

c. *Identify the watershed administrative unit (WAU), the WAU Sub-basin(s), and acres. (See also landscape/WAU map on DNR website http://www.dnr.wa.gov under " SEPA Center.")*

WAU Name	WAU Acres	Proposal Acres
DEER CREEK	**42,980**	**62**
LAKE CAVANAUGH	**29,882**	**53**

13. *Discuss any known future activities not associated with this proposal that may result in a cumulative change in the environment when combined with the past and current proposal(s). (See digital ortho-photos for WAU and adjacency maps on DNR website http://www.dnr.wa.gov under "SEPA Center" for a broader landscape perspective.)*

All WAU data received from the "SEPA Center" on 04/27/2009.

Known and Observed WAU activities

The following tables are an estimated summary of past and future activity on DNR-managed land and privately owned land.

Name	Acres	DNR managed acres	% DNR managed land	Non-DNR land	% Non-DNR land
Deer Creek WAU	42,980	7,985	18.6%	34,995	81.4%
Lake Cavanaugh WAU	29,882	17,220	57.6%	12,662	42.4%

Lake Cavanaugh WAU:

Approximately 58% of the land within the WAU is managed by the DNR. Sub-basin 5 has a total of 3,799 acres, of which 3% is under DNR management. The remaining acres are in federal, private, or other public land ownership (non-DNR).

On all ownerships there has been periodic even-aged harvesting throughout the WAU. Within the Lake Cavanaugh WAU, parts of 36 even-aged harvests have been completed in the last 7 years and approximately three harvests planned on DNR ownership for the immediate future. The planned activity of the adjacent landowners in the WAU is unknown.

Knights Knife Timber Sale was the most recent harvest and is adjacent to the south boundary of Unit 2 and east of Unit 3.

Many areas within the above listed WAU are candidates for future even-aged and commercial thinning harvest activities. Additional road building and rock pit development may occur for access to forest management activities on DNR managed land and other ownerships.

Lake Cavanaugh WAU	*WAU Acres	Acres of even-aged harvest within the last seven years	Acres of uneven-aged harvest within the last seven years
DNR MANAGED LAND	17,220	4,605	504
Non-DNR Managed Land	12,662	749	0
TOTAL	29,882	5,354	504

Deer Creek WAU:

Approximately 19% of the land within the WAU is managed by the DNR. Sub-basin 3 has a total of 11,168 acres, of which 59% is under DNR management and 216 acres have been harvested since 2006. The remaining acres are in State, private or other public land ownership (non-DNR).

On all ownerships there has been periodic even-aged harvesting throughout the WAU.

Within the Deer Creek WAU, parts of 5 even-aged harvests have been completed within the last 7 years adjacent to the proposed Captains Cup harvest. Approximately three harvests planned in DNR ownership for the immediate future. The planned activity of the adjacent landowners in the WAU is unknown.

Many areas within the above listed WAU are candidates for future even-aged and commercial thinning harvest activities. Additional road building and rock pit development may occur for access to forest management activities on DNR managed land and other ownerships.

Deer Creek WAU	*WAU Acres	Acres of even-aged harvest within the last seven years	Acres of uneven-aged harvest within the last seven years
DNR MANAGED LAND	7,985	436	27
Non-DNR Managed Land	34,995	384	0
TOTAL	42,980	820	27

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site (check one):

☐Flat, ☐Rolling, ☐Hilly, ☒Steep Slopes, ☐Mountainous, ☐Other:

1) *General description of the WAU or sub-basin(s) (landforms, climate, elevations, and forest vegetation zone).*
The Deer Creek WAU has generally rolling to mountainous terrian with some steep slopes. Elevations in the WAU range from 172 feet above sea level to 5,324 feet at the highest point. About 30% of the WAU is located in peak rain-on-snow zone with the average rainfall in the WAU being around 84 inches annually. The primary conifers found in the WAU are western redcedar, western hemlock, Douglas-fir in the lower elevations and redcedar, western hemlock, and Pacific silver fir in the higher elevations. Hardwood stands of red alder, bigleaf maple, and/or cottonwood stands can be found through out the WAU.

The Lake Cavanaugh WAU varies from flat to mountainous, which include Mt. Washington, Table Mountain, Frailey Mountain, and Bald Mountain. Streams within the WAU flow into Pilchuck Creek or Lake Cavanaugh. Rainfall within the WAU averages 45-80 inches annually, with an average of 60 inches. Elevations range from 414 to 3,935 feet. Timber types range from hardwood to conifer; with red alder, bigleaf maple, and/or cottonwood hardwood stands, and Douglas-fir, western hemlock, and/or western redcedar stands on the low to mid-elevations. Higher elevations in the WAU contain conifer stands generally comprised of Pacific silver fir, western hemlock, and/or western redcedar.

2) *Identify any difference between the proposal location and the general description of the WAU or sub-basin(s).*

The proposal area is typical of the rest of the WAU.

b. What is the steepest slope on the site (approximate percent slope)? **100%**

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland. *Note: The following table is created from state soil survey data. It is a roll-up of general soils information for the soils found in the entire sale area. It is only one of several site assessment tools used in conjunction with actual site inspections for slope stability concerns or erosion potential. It can help indicate potential for shallow, rapid soil movement, but often does not represent deeper soil sub-strata. The actual soils conditions in the sale area may vary considerably based on land-form shapes, presence of erosive situations, and other factors. The state soil survey is a compilation of various surveys with different standards.*

State Soil Survey #	Soil Texture or Soil Complex Name	% Slope	Acres	Mass Wasting Potential	Erosion Potential
1948	**GRAVELLY SILT LOAM**	**3-30**	**61**	**INSIGNIFICANT**	**LOW**
5601	**GRAVELLY SILT LOAM**	**30-65**	**28**	**MEDIUM**	**MEDIUM**
3620	**V.GRAVELLY SANDY LOAM**	**0-30**	**25**	**INSIGNIFICANT**	**LOW**
0139	**V.GRAVELLY SILT LOAM**	**40-65**	**1**	**MEDIUM**	**MEDIUM**

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

1) *Surface indications:*

There have been slope failures or areas of instability into the Deer Creek basin.

2) *Is there evidence of natural slope failures in the sub-basin(s)?*
☐*No* ☒*Yes, type of failures (shallow vs. deep-seated) and failure site characteristics:*

There is some evidence of small slope failures along some of the stream reaches in the Deer Creek WAU. These are generally associated with stream reaches in steep draws that have formed by cutting through dense glacial till.

3) *Are there slope failures in the sub-basin(s) associated with timber harvest activities or roads?*
☐*No* ☒*Yes, type of failures (shallow vs. deep-seated) and failure site characteristics:*
Associated management activity:

Past forest practices activity didn't leave stream buffers or culvert sizing to account for peak flow events.

Current forest practice and HCP procedures protect streams with buffers and leave trees, and culverts are sized for peak flow events.

4) *Is the proposed site similar to sites where slope failures have occurred previously in the sub-basin(s)?*
☒*No* ☐*Yes, describe similarities between the conditions and activities on these sites:*

Limited areas within the proposal have steep shallow soils prone to failure in extreme rainfall events.

5) *Describe any slope stability protection measures (including sale boundary location, road, and harvest system decisions) incorporated into this proposal.*

Roads to be constructed under this proposal have been located in areas where there no known slope stability issues. Proposed road construction on slopes greater than 50 percent is limited to 231 feet and located on an old stable rail grade.

Unit 1 of the proposal is in the immediate vicinity of potentially unstable soils. The areas of instability have been identified by a region geologist and protected by bounding out and prohibiting any activities. The Deer Creek Watershed analysis has been evaluated for potential mass wasting and all harvest activities are in compliance with the watershed analysis prescriptions.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.
Approx. acreage new roads: **1.06 ac.** *Approx. acreage new landings:* **1 ac.** *Fill source:* **Native Materials**

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

A small amount of incidental erosion could occur during the course of road building, rock pit development activities, and yarding. However, prudent road location, appropriate construction techniques and maintenance, as well as the mitigating measures outlined in question B.1.h. below will minimize and control any possible erosion.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? *Approximate percent of proposal in permanent road running surface (includes gravel roads):*

Approximately 1% of the site will be covered with impervious surfaces in the form of gravel roads and landings during harvest activities.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:
(Include protection measures for minimizing compaction or rutting.)

Energy dissipators will be installed with culverts to reduce erosion. Relief pipes will be strategically placed to reduce road ditch sediment from entering live streams. Slopes that are exposed of vegetative cover during road construction activities will be revegetated to reduce sediment-laden runoff.

2. Air

a. What types of emissions to the air would result from the proposal (i.e., dust *from truck traffic, rock mining, crushing or hauling,* automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

Minor amounts of engine exhaust from logging equipment and dust from vehicle traffic and logging equipment are expected while the project is active.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

No.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

If slash burning occurs, it will be in adherence to the Washington State Smoke Management Act.

3. Water

a. Surface:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into. *(See timber sale map available at DNR region office, or forest practice application base maps.)*

There are six type 3, nine type 4 and nineteen type 5 streams within the proposed area. All streams associated with this sale flow into the Deer Creek River.

a) Downstream water bodies:

All streams flow into unnamed tributaries then into the Deer Creek River.

b) Complete the following riparian & wetland management zone table:

Wetland, Stream, Lake, Pond, or Saltwater Name (if any)	Water Type	Number (how many?)	Avg RMZ/WMZ Width in Feet (per side for streams)
Unnamed Wetland	**Forested**	**2**	**131**
Unnamed Wetland	**Forested**	**1**	**100**
Unnamed Stream	**3**	**1**	**131**
Unnamed Stream	**3**	**2**	**153**
Unnamed Stream	**3**	**3**	**160**
Unnamed Stream	**4**	**9**	**100**
Unnamed Stream	**5**	**26**	**(30' equipment limitation zone)**

c) List RMZ/WMZ protection measures including silvicultural prescriptions, road-related RMZ/WMZ protection measures, and wind buffers.

Unit 1, 2 and 3:

- **Type 3 streams: No-harvest buffer, measured in feet, equal or greater than the 100 year western hemlock site index.**
- **Type 4 streams: 100 foot no-harvest buffer.**
- **Type 5 streams: 30-foot equipment limitation zone and bank protection when yarding over stream channel.**
- **No wind buffer was applied to any of the streams, most of the RMZ's run in a similar direction, south to southwest, to typical wind throw events seen in this landscape.**
- **Road location within RMZ and WMZ has been minimized and any road location through WMZ has mitigated as per HCP procedures and guidelines.**

Road Related:

- **The road construction will include installation of relief culverts at pertinent points along the new road system. Ditchwater will be diverted through relief culverts prior to stream crossing to keep sediment out of streams. All constructed roads through Riparian Management Zone's (RMZ's) will be monitored during hauling to ensure ditchwater and road runoff will not enter or otherwise adversely affect water quality or RMZ function. Corrective action such as straw bales, silt fencing, rock-lined ditches, and sediment traps will be installed/constructed if necessary. Exposed soils will be grass seeded and mulched**

if needed. Road location within RMZ and WMZ has been minimized and any road location through WMZ has been mitigated as per HCP procedures and guidelines.

2) Will the project require any work over, in, or adjacent to (within 200 feet) to the described waters? If yes, please describe and attach available plans.
☐*No* ☒*Yes (See RMZ/WMZ table above and timber sale map available at DNR region office.)*
Description (include culverts):

See A.11.c. This proposal includes replacement of a culvert with the installation of a fish passable structural plate bottomless arch with pre-cast concrete footings.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

None.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known. *(Include diversions for fish-passage culvert installation.)*
☐*No* ☒*Yes, description:*

When necessary to protect water quality or as required by HPA, stream flow may be temporarily diverted around construction area through bypass culverts or retained behind (or pumped around) coffer dams during culvert installations.

This proposal includes replacement of a culvert with the installation of a fish passable structural plate bottomless arch with pre-cast concrete footings.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.
☒*No* ☐*Yes, describe location:*

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.
☐*No* ☒*Yes, type and volume:*

Minor amounts of sediment may be discharged during culvert installation over live streams.

7) Does the sub-basin contain soils or terrain susceptible to surface erosion and/or mass wasting? What is the potential for eroded material to enter surface water?

Generally, the high potential areas associated with erosion or mass wasting are located on slopes of 70% or greater, and often involve unstable soils and/or steep head walls. Some past failures have entered streams in small amounts. With the mitigating measures to be implemented, this proposal is not expected to contribute significant amounts of material to surface waters. (See questions B.1.c, B.1.d, B.1.f, B.1.h, B.3.a.)

8) Is there evidence of changes to the channels in the WAU and sub-basin(s) due to surface erosion or mass wasting (accelerated aggradations, erosion, decrease in large organic debris (LOD), change in channel dimensions)?
☐*No* ☒*Yes, describe changes and possible causes:*

At the WAU level there is evidence of aggradations in low-gradient channel reaches and channel scouring in the upper reaches. These changes are associated with mass wasting and channelized debris flows. There is no evidence of significant channel movement. No channel changes are apparent within the sub-basins.

9) Could this proposal affect water quality based on the answers to the questions 1-8 above?
☐*No* ☒*Yes, explain:*

This proposal could inadvertently introduce minor amounts of sediment into the streams adjacent to the proposal area as a result of road building and logging operations during early stages of activity. The erosion control measures and operation procedures outlined in B.1.d.5, B.1.f and B.1.h. are expected to minimize the chances of any sediment delivery.

10) What are the approximate road miles per square mile in the WAU and sub-basin(s)?

The Lake Cavanaugh WAU has 4.7 miles per square mile.
The Deer Creek WAU has 2.7 miles per square mile.

Are you aware of areas where forest roads or road ditches intercept sub-surface flow and deliver surface water to streams, rather than back to the forest floor?
☒*No* ☐*Yes, describe:*

11) *Is the proposal within a significant rain-on-snow (ROS) zone? If not,* ***STOP HERE*** *and go to question B-3-a-13 below. Use the WAU or sub-basin(s) for the ROS percentage questions below.*
☐*No* ☒*Yes, approximate percent of WAU in significant ROS zone.*
Approximate percent of sub-basin(s):

1. **The sub-basins will not be managed to meet HCP hydrologic maturity requirements when less than 1/3 of the sub-basins area is within the ROS and snow dominated zones combined. Sub-basin 5 of the Lake Cavanaugh WAU is at 19%.**
2. **If the ROS zone that is DNR/HCP forest managed, and 25+ years, is over 2/3 then management activities may proceed to remove hydrologically mature stands. Sub-basin 3 of the Deer Creek WAU is at 84%.**

11) *If the proposal is within the significant ROS zone, what is the approximate percentage of the WAU or sub-basin(s) within the significant ROS zone (all ownerships) that is (are) rated as hydrologically mature?*

Deer Creek WAU=84%

13) *Is there evidence of changes to channels associated with peak flows in the WAU or sub-basin(s)?*
☐*No* ☒*Yes, describe observations:*

No CMZ's are present within the proposal; however, the Deer Creek WAU does contain channel migration zones (CMZ). As channels migrate they undercut stream banks and sometimes cause mass wasting and erosion. It is very difficult to separate the effects of peak system flow increases from the effects of mass wasting in stream channels. The effects are interrelated and often occur during the same storm events. Stream networks in the Deer Creek WAU contain both high gradient sediment source and sediment transport reaches, and low gradient sediment source and sediment transport reaches. Some of the low gradient channels show persistent morphological adjustments. Sediment input to channels is episodic in nature, sometimes causing channel location changes, widening and deposition.

14) *Based on your answers to questions B-3-a-10 through B-3-a-13 above, describe whether and how this proposal, in combination with other past, current, or reasonably foreseeable proposals in the WAU and sub-basin(s), may contribute to a peak flow impact.*

This proposal is not anticipated to affect peak flow. Slopes in all units are subject to local surface erosion where surface soils are disturbed. Surface erosion control/prevention measures discussed in B.1.h. would minimize or prevent delivery to surface waters. Due to a relatively small impact on the status of hydrologically mature stands, and the relatively high amount of land in hydrologically mature status this proposal should have a low impact on peak flows.

15) *Is there water resource (public, domestic, agricultural, hatchery, etc.), or area of slope instability, downstream or downslope of the proposed activity that could be affected by changes in surface water amounts, quality, or movements as a result of this proposal?*
☒*No* ☐*Yes, possible impacts:*

Due to the protective measures cited in B.1.c, B.1.d, B.1.f, B.1.h, B.3.a.1.c. significant impacts are unlikely.

16) *Based on your answers to questions B-3-a-10 through B-3-a-15 above, note any protection measures addressing possible peak flow/flooding impacts.*

- **The buffers described in question 3.a.1.c. above will prohibit harvest activities within an average of 100 feet of the type 4 streams and equal or greater than the 100 year western hemlock site index of the type 3 streams.**
- **Portions of the type 5 streams have been protected with leave trees, and yarding through type 5 streams may be restricted.**

- **There will be a 30-foot equipment limitation zone along all type 5 streams.**
- **Any slash that enters any stream shall be cleaned out per contract requirements. Further erosion control measures will be implemented if necessary.**
- **Timber shall be felled and yarded away from all streams where possible.**

b. Ground *Water*:

1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.

Channeling water through ditches and culverts emptying out onto the forest floor will increase surface saturation in localized areas, but is not expected to affect ground water.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

Minor amounts of oil, fuel and other lubricants may inadvertently be discharged to the ground as a result of heavy equipment use or mechanical failure. No lubricants will be disposed of on site. This proposed activity is expected to have no impact on ground water.

3) Is there a water resource use (public, domestic, agricultural, hatchery, etc.), or area of slope instability, downstream or down slope of the proposed activity that could be affected by changes in groundwater amounts, timing, or movements as a result this proposal?
☒*No* ☐*Yes, describe:*
Due to the nature of resource protective measures of the proposal, there should be no measurable effect on down-slope or downstream ground water resources. See question B.3.a.14.

a) Note protection measures, if any.

c. Water Runoff (including storm water):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Storm water will be the only runoff associated with this proposal. On roads, storm runoff will be collected by road ditches and diverted through cross-drains over energy dissipaters and onto the forest floor. Within the harvest unit, runoff will follow natural topography and be largely absorbed into the ground.

2) Could waste materials enter ground or surface waters? If so, generally describe.

a) Note protection measures, if any.

The buffers described in question 3.a.1.c. above will prohibit harvest activities within a minimum of 100 feet of the type 4 streams.

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

See surface water, ground water, and water runoff sections above, questions B.3.a.1.c, B.3.a.16, B.3.b.3.a, and B.3.c.2.a.

4. Plants

a. Check or circle types of vegetation found on the site:

☒deciduous tree: ☒alder, ☐maple, ☐aspen, ☒*cottonwood,* ☐*western larch,* ☐*birch,* ☐other:
☒evergreen tree: ☒*Douglas fir,* ☐*grand fir,* ☒*Pacific silver fir,* ☐*ponderosa pine,* ☐*lodgepole pine,* ☒*western hemlock,* ☐*mountain hemlock,* ☐*Englemann spruce,* ☒*Sitka spruce,* ☒*red cedar,* ☐*yellow cedar,* ☐other:
☒shrubs: ☒*huckleberry,* ☒*salmonberry,* ☒*salal,* ☒*other:* **elderberry**
☐grass
☐pasture
☐crop or grain
☒wet soil plants: ☐cattail, ☒buttercup, ☐bullrush, ☒skunk cabbage, ☒*devil's club,* ☐other:
☐water plants: ☐water lily, ☐eelgrass, ☐milfoil, ☐other:
☒other types of vegetation: **wild rose, sword fern, rattlesnake plantain**

☐*plant communities of concern:*

b. What kind and amount of vegetation will be removed or altered? *(See answers to questions A-11-a, A-11-b, B-3-a-1-b and B-3-a-1-c. The following sub-questions merely supplement those answers.)*

1) *Describe the species, age, and structural diversity of the timber types immediately adjacent to the removal area. (See landscape/WAU and adjacency maps on the DNR website at: http://www.dnr.wa.gov under "SEPA Center.")*

The overstory of live, coniferous and hardwood vegetation that meets current industry merchantability standards will be removed, with the exception of riparian management zones, and eight trees per acre of 10" dbh or greater in Units 1, 2 and 3. Most of the current shrubs and herbaceous plants will be disturbed to varying degrees during the timber removal process of this proposed operation.

Unit 1 is surrounded by DNR-managed land. Unit 1 is a mature timber stand of conifers approximately 80 years old. The east and west is bounded by mature conifer stands with age and structural diversity consistent with the proposed harvest area. To the northeast and south is a young conifer stand that was planted in the year 1999. The stand to the north is land that consists of young conifer that was planted in 1993.

Unit 2 is surrounded by DNR-managed land and some private timber land to the north. Unit 2 is a mature timber stand of conifers approximately 80 years old. The west is bounded by a mature conifer stand with age and structural diversity consistent with the proposed harvest area. The south is bounded by a young conifer stand planted in 2005. The east is bounded by a wetland and approximately 10 year old conifer stand. The northeast and southeast is bounded by an approximately 15-year-old conifer stand.

Unit 3 is surrounded by DNR-managed land and private timber land to the north. Unit 3 is a mature timber stand of conifers. The north is bounded by the same private property ownership as Unit 2. The southwest, south and northeast boundaries consist of mature forest approximately 80 years old. The west is bounded by young conifer planted in 2000 and the west by a 4 year old young stand.

2) *Retention tree plan:*

All units will have an average of eight wildlife and green recruitment leave trees per acre remaining on site upon completion of harvest activities. Unit 1 is comprised of 291 leave trees clumped and Unit 2 has 256 leave trees clumped and 8 single trees scattered. Unit 3 is comprised of 432 trees clumped and 16 trees scattered. All retained trees will provide wildlife habitat, older forest components, and a seed source to surrounding areas. This will ensure that a portion of the live merchantable timber that is best suited to the site, and /or exhibits desirable wildlife habitat characteristics will be left on site. This sale contains a few scattered legacy remnant trees in Unit 1 that have been protected, and retained within a leave tree clump. The site will be replanted with conifer seedlings at a stocking level that meets or exceeds Forest Practices standards.

c. List threatened or endangered *plant* species known to be on or near the site.

TSU Number	FMU_ID	Common Name	Federal Listing Status	WA State Listing Status
None Found in Database Search				

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

- **Eight wildlife and green retention trees per acre will be clumped and scattered throughout the proposal, except Unit 1 where a region biologist approved a smaller number of leave tree areas so that remnant legacy trees may be protected.**
- **RMZ corridors will be retained on all type 3 streams and type 4 streams.**
- **Harvest areas will be replanted with native conifers.**
- **Exposed soils, due to road construction, will be grass seeded.**

5. Animal

a. Circle or check any birds animals *or unique habitats* which have been observed on or near the site or are known to be on or near the site:

birds: ☐hawk, ☐heron, ☐eagle, ☒songbirds, ☐*pigeon*, ☒other: **barred owl, red headed woodpecker, sapsuckers**
mammals: ☒deer, ☐bear, ☐elk, ☒beaver, ☒other: squirrels

fish: ☐bass, ☐salmon, ☒trout, ☐herring, ☐shellfish, ☐other:
unique habitats: ☐*talus slopes,* ☐*caves,* ☐*cliffs,* ☐*oak woodlands,* ☐*balds,* ☐*mineral springs*

b. List any threatened or endangered species known to be on or near the site *(include federal- and state-listed species).*

TSU_Number	FMU_ID	Common Name	Federal Listing Status	WA State Listing Status
None Found in Database Search				

c. Is the site part of a migration route? If so, explain.
☒*Pacific flyway* ☐*Other migration route:* *Explain if any boxes checked:*

This proposal is located in the Pacific flyway. While migrating through Pacific Northwest forests, many neotropical migratory birds are closely associated with riparian areas, cliffs, snags, and structurally unique trees. Riparian areas and special habitats are protected through implementation of DNR's Habitat Conservation Plan.

d. Proposed measures to preserve or enhance wildlife, if any:

An average of eight mature trees per acre will be left within the proposal area and three older remnant trees have been protected. Larger diameter trees that have large limbs, open crowns, and broken tops will be left to maintain current habitat needs and provide future habitat opportunities for many species. These trees will likely become snags and retention trees in future generations. Riparian Management Zones will maintain water quality, provide migratory corridors for wildlife, and maintain habitat for fish, reptiles, and other riparian obligate species. The no-harvest RMZs left along type 3 waters and type 4 waters and their associated wetlands are conducive to water quality and serve as protected areas for wildlife habitat.

Timing restrictions for marbled murrelet will be implemented for operations within ¼ mile of the occupied site. No felling, bucking, yarding or operation of heavy equipment will be allowed one hour before official sunrise to two hours after official sunrise and one hour before official sunset to one hour after official sunset from April 1 to August 31. This timing restriction includes only the portions of Unit 1 located south of the LC-ML on either side of the LC-27 road.

1) *Note existing or proposed protection measures, if any, for the complete proposal described in question A-11.*
Species /Habitat: **marbled murrelet occupied site adjacent to Unit 1.**Protection Measures: **Protection Measures: A 165' no harvest buffer has been applied. Timing restrictions will also be applied to activities associated with the proposal that are within ¼ mile of the site.**

6. Energy and Natural Resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

None.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

None.

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste that could occur as a result of this proposal? If so, describe.

The timber sale contract contains language that addresses hazardous materials spill prevention; hazardous material spill containment, control and cleanup; hazardous material release reporting.

1) Describe special emergency services that might be required.

- **Firefighting by the Department of Natural Resources, possibly supported by local fire districts.**
- **Emergency medical and/or ambulance service for personal injuries.**
- **Responses by the Department of Ecology if a spill were to occur.**

2) Proposed measures to reduce or control environmental health hazards, if any:

Safe operation of all equipment will be encouraged. Industrial restrictions and precaution levels regarding forest fire protection will be enforced. The timber purchaser will be required to have fire suppression equipment on site during the restricted fire season while harvest activity is ongoing. All operations shall be conducted in a manner that avoids the release of hazardous materials, including petroleum products, into the environment (water, air or land).

If safe to do so, Purchaser shall take immediate action to contain and control all hazardous material spills. At a minimum, a quick response kit capable of absorbing 4 to 6 gallons of oil, coolant, solvent or contaminated water shall be available on site. If large quantities of bulk fuel/other hazardous materials are stored on site, Purchaser must be able to effectively control a container leak and contain and recover a hazmat spill equal to the largest single on site storage container volume. (HAZWOPER reg. 29CFR 1910.120 (j) (1) (vii)).

Purchaser shall provide a written Extreme Hazard Abatement plan that meets the requirements of WAC 332-24 prior to the beginning of logging operations.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

None.

2) What types and levels of noise would be created by or associated with the project on a short-term or long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from this site.

Noise from rock drilling/crushing machinery, rock blasting, road building and logging equipment, chain saws, yarding whistles, and log/dump trucks will increase during periods of operation, typically occurring between 6am and 5pm on weekdays, on a short-term basis.

3) Proposed measures to reduce or control noise impacts, if any:

None Planned. Noise associated with harvest and road construction activity will be minimal anywhere but in the immediate vicinity of the proposal. Harvest activity and log hauling are ordinary activities in the area and noise should not be present above customary levels.

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties? *(Site includes the complete proposal, e.g. rock pits and access roads.)*

Forestry management.

b. Has the site been used for agriculture? If so, describe.

No.

c. Describe any structures on the site.

None.

d. Will any structures be demolished? If so, what?

No.

e. What is the current zoning classification of the site?

Commercial Forest Land.

f. What is the current comprehensive plan designation of the site?

Resource Land.

g. If applicable, what is the current shoreline master program designation of the site?

Does not apply.

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

No.

i. Approximately how many people would reside or work in the completed project?

None.

j. Approximately how many people would the completed project displace?

None.

k. Proposed measures to avoid or reduce displacement impacts, if any:

None.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

All harvest units will be reforested with a commercial species and retained as forestland. This proposal is consistent with current land use designations and zoning regulations.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

None.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

None.

c. Proposed measures to reduce or control housing impacts, if any:

None.

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principle exterior building material(s) proposed?

Does not apply.

b. What views in the immediate vicinity would be altered or obstructed?

1) *Is this proposal visible from a residential area, town, city, developed recreation site, or a scenic vista?*
☒*No* ☐*Yes, viewing location:*

2) *Is this proposal visible from a major transportation or designated scenic corridor (county road, state or interstate highway, US route, river, or Columbia Gorge SMA)?*
☒*No* ☐*Yes, scenic corridor name:*

3) *How will this proposal affect any views described in 1) or 2) above?*

a. Proposed measures to reduce or control aesthetic impacts, if any:

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

None.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

None.

c. What existing off-site sources of light or glare may affect your proposal?

None.

d. Proposed measures to reduce or control light and glare impacts, if any:

None.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

Dispersed informal recreation in the form of hunting, berry picking, hiking, sightseeing, etc.

b. Would the proposed project displace any existing recreational uses? If so, describe:

Recreation will be temporarily displaced during logging operations on the timber harvest area.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

No.

13. Historic and Cultural Preservation

a. Are there any places or objects listed on, or proposed for national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.

Does not apply.

c. Proposed measures to reduce or control impacts, if any:
(Include all meetings or consultations with tribes, archaeologists, anthropologists or other authorities.)

Does not apply.

14. Transportation

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

1) Is it likely that this proposal will contribute to an existing safety, noise, dust, maintenance, or other transportation impact problem(s)?

No.

b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

C. **SIGNATURE**

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Completed by: Philip J Robert Natural Resource Specialist Date: 6/18/09

Title